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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/598,413

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EXAMINER

KESSLER, CHRISTOPHER S

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,413	Applicant(s) NAKAI ET AL.	
	Examiner CHRISTOPHER KESSLER	Art Unit 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 15-19 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 15-19 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/27/11</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 May 2011 has been entered.

Status of Claims

2. Responsive to the amendment filed 20 May 2011, claim 1 is amended. Claims 1, 15-19 and 22 are currently under examination.

Status of Previous Rejections

3. Responsive to the amendment filed 20 May 2011, new grounds of rejection are presented.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 16-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada, in view of Sugaya, and in view of Imai.

Regarding claim 1, Harada teaches the invention substantially as claimed. Harada teaches a method of power molding (see title). Harada teaches that in the method, the powder to be molded and the molding die are heated, and a lubricant is coated onto the die (see [0007]). Harada teaches that the molding portion of the die is filled with a raw powder and that punches are fitted into the molding portion (see [0018]-[0022] and Figures 1, 2, and 3). Harada teaches that the die is lubricated by dispersing or dissolving a solid lubricant in a solvent such as water (see [0016]). Harada teaches that the lubricant is applied to the molding die by spraying the liquid onto the heated die (see [0019], Figures 1 and 3). Harada teaches that due to the heating of the mold, the fluid in the sprayed lubricant quickly evaporates, leaving a lubricant film on the die (see [0023]-[0024]).

Harada teaches that a powder is filled into the mold (see Fig. 1 and [0025] for example). Harada teaches that the punches are fitted into the molding portion of the mold (see Fig. 1 and [0018]-[0023] for example).

Harada does not teach the step of forming a hydrophilic coating on the molding portion of the mold prior to applying the lubricant. Harada does not teach wherein the lubricant is a water soluble lubricant with at least 3 g of solubility for 100g of water at 20° C. Harada does not teach wherein the layer or film formed on the surface of the molding portion is crystallized. Harada does not specify the solubility of any lubricants or the crystallinity of any film.

Sugaya teaches a die used for die compaction of powdered metal (see title, abstract, Brief Summary of the Invention or claim 1). Sugaya teaches that the die is formed with a coating on the molding portion which may include an Al_2O_3 material (see Brief Summary of the Invention or [0017] or [0021]). The Al_2O_3 material meets the limitation of a hydrophilic material comprising an Al-O bond element inherently, because it is the same material as described in the instant claim and specification. Applicant is further directed to MPEP 2112.01. Sugaya teaches that the die is used in order to reduce friction inside the wall of the die and reduce ejection pressure (see [0009], [0007], [or [00021]). Sugaya teaches that for the compaction step, a lubricant film is added to the coated die surface, and to the metal powder (see [0023]). Sugaya teaches that the lubricant is added to the die after the coating of the other material (see [0023]).

Imai teaches an aqueous lubricant for working of metallic materials (see [0009]). Imai teaches that the composition includes a water soluble inorganic salt (see [0010]). Imai teaches that the inorganic salt may include silicates, borates, or tungstates, such as a sodium tungstate (see [0011] and [0021]). Imai teaches that the components are dissolved or dispersed in the water (see [0011]), i.e., the soluble components are dissolved and the insoluble components dispersed. Imai teaches that the salt dries completely and forms a coating on the metal to be lubricated (see [0021]). Imai does not teach wherein the concentration of the soluble lubricant falls in the range as claimed. Imai does not specify a concentration of the aqueous lubricant at all. However, Imai teaches that the concentration of the lubricant is adjusted in order to control the weight of the coating and its lubricity (see [0028]-[0029]). Thus, the

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concentration of the soluble lubricant is a results-effective variable with regard to the weight of the coating and lubricity, and would have been adjusted and optimized as needed by one of ordinary skill in the art. Applicant is further directed to MPEP 2144.05.

It would have been obvious to one of ordinary skill in the art at time of invention to have practiced the method of Harada, and to have used in the method the coated die of Sugaya, because Sugaya teaches that the die is used in order to reduce friction inside the wall of the die and reduce ejection pressure (see [0009], [0007], [or [00021]], and further to have used an aqueous solution of a sodium tungstate salt as taught by Imai (cited above), because Imai teaches that these salts form a protective film on the metal to be lubricated (as cited above).

Regarding the limitations of reducing the contact angle of the aqueous lubricant solution, this feature would have been present when the coating of Sugaya was applied. The same Al_2O_3 material applied to the die would have had the same hydrophilic properties, resulting in a decrease of the wetting angle compared with the die material. Regarding the crystallinity of the film, formed, the film formed on the die would have had the claimed crystallinity, at least due to the presence of sodium tungstate. Applicant is further directed to MPEP 2112.01.

Regarding claim 16, Harada in view of Sugaya and Imai does not teach wherein a defoaming agent is added. However, the use of defoaming agents in a chemical mixture is not new or innovative. The examiner had previously taken Official notice that it would have been obvious to one of ordinary skill in the art at time of invention to have

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added a defoaming agent to the composition in order to prevent foaming and improve homogeneity of the mixture during mixing. Applicant is further directed to MPEP 2144.03. Since applicant has not traversed the examiner's assertion that the use of a defoaming agent is known in the art, the common knowledge or well-known in the art statement is taken to be admitted prior art.

Regarding claims 17-18, Harada teaches that the solvent used could be either water or alcohol (see [0016]). Thus it would have been obvious to one of ordinary skill in the art at time of invention to have used a mixture of water and alcohol as the solvent, because Harada teaches that they are functional equivalents. Alcohol meets the limitation of a water soluble solvent. Applicant is further directed to MPEP 2144.06.

Regarding claim 19, neither Harada nor Sugaya nor Imai teaches that a halogen element should be included. Thus, the disclosures of each of these references would have led one of ordinary skill in the art to have excluded a halogen element.

Regarding claim 22, Harada teaches that the die molding portion is heated to a temperature of up to 350, or 300, or 250, or 200 °C, and at least 170, or 200 or 230°C (see [0012]). Thus, the temperature range taught by Harada overlaps the claimed range, establishing a prima facie case of obviousness for that range.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harada, in view of Sugaya, and in view of Imai as applied to claim 1, and further in view of US Patent 3,341,454 (hereinafter "Chor").

Regarding claim 15, Harada, in view of Sugaya, and Imai does not teach wherein an antiseptic is added to the aqueous lubricant composition. However, the addition of antiseptic additives to such water-based lubricants.

For example, Chor teaches a lubricant composition for use in molds and dies (see title, or col. 1). Chor teaches that the composition may be stored in powder form and added to water (see col. 1). Chor teaches that a fungicide/bactericide may be added in order to combat mold growth (see col. 2), said fungicide/bactericide meeting the limitation of an antiseptic.

It would have been obvious to one of ordinary skill in the art at time of invention to have practiced the method of Harada, and to have used in the method the coated die of Sugaya, because Sugaya teaches that the die is used in order to reduce friction inside the wall of the die and reduce ejection pressure (see [0009], [0007], [or [00021]], and further to have used an aqueous solution of a sodium tungstate salt as taught by Imai (cited above), because Imai teaches that these salts form a protective film on the metal to be lubricated (as cited above), and further to have included a fungicide/bactericide, as taught by Chor, in order to combat mold growth, as taught by Chor (cited above).

7. Claims 1, 15-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harada in view of Sugaya, and further in view of Murata.

Regarding claim 1, Harada teaches the invention substantially as claimed. The teachings of Harada in view of Sugaya are discussed above.

Harada does not teach wherein the lubricant is a water soluble lubricant with at least 3 g of solubility for 100g of water at 20° C. Harada does not teach wherein the layer or film formed on the surface of the molding portion is crystallized. Harada does not specify the solubility of any lubricants or the crystallinity of any film.

Murata teaches a waterborne lubricant used for working metals (see p. 1). Murata teaches that the lubricant can be used to coat and lubricate tooling for metal working (see pp. 2-3). Murata teaches that the water borne lubricant comprises water and an inorganic salt (see p. 3). Murata teaches that the inorganic salt may comprise any water-soluble inorganic salt that forms a suitable coating, such as potassium nitrate or potassium sulfate (see pp.4-5). Murata teaches that the special composition of the lubricant reduces the friction between the workpiece and the tool to reduce seizure (see p. 11). Murata teaches that the composition comprises 5-45% solids (lubricants), the rest being water (see p. 8). Murata teaches that the ratio of oily component to solid lubricant and inorganic salt ($C/\{A+B\}$) is in the range of 0.05:1 to 1.0:1, and that the surfactant comprises 0.2 to 5% of the lubricant (see p. 8). Thus, the composition of the inorganic salt overlaps the claimed range establishing a prima facie case of obviousness for that range. It would have been obvious to one of ordinary skill in the art at time of invention to have selected an amount of potassium sulfate or potassium nitrate in the range as claimed because Murata teaches the same utility over an overlapping range. Applicant is further directed to MPEP 2144.05.

It would have been obvious to one of ordinary skill in the art at time of invention to have practiced the method of Harada, and to have used in the method the coated die

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of Sugaya, because Sugaya teaches that the die is used in order to reduce friction inside the wall of the die and reduce ejection pressure (see [0009], [0007], [or [00021]], and to have used the liquid lubricant of Murata, because Murata teaches that the lubricant composition reduces the friction between the workpiece and the tool to reduce seizure (see p. 11).

Regarding the limitations of the solubility of the lubricant, Murata teaches that the lubricant may comprise potassium sulfate or potassium nitrate (see pp.4-5), which meets the limitation of the claim regarding solubility. Applicant is further directed to MPEP 2112.01.

Regarding the limitations of reducing the contact angle of the aqueous lubricant solution, this feature would have been present when the coating of Sugaya was applied. The same Al_2O_3 material applied to the die would have had the same hydrophilic properties, resulting in a decrease of the wetting angle compared with the die material. Regarding the crystallinity of the film, formed, the film formed on the die would have had the claimed crystallinity, at least due to the presence of potassium sulfate or potassium nitrate, both known as highly crystalline materials. Applicant is further directed to MPEP 2112.01.

Regarding claim 15, Murata teaches that an antiseptic substance (preservative) is added to the lubricant (see p. 7).

Regarding claim 16, Murata teaches that a defoamer is added to the lubricant (see p. 7).

Regarding claims 17-18, Harada teaches that the solvent used could be either water or alcohol (see [0016]). Thus it would have been obvious to one of ordinary skill in the art at time of invention to have used a mixture of water and alcohol as the solvent, because Harada teaches that they are functional equivalents. Alcohol meets the limitation of a water soluble solvent. Applicant is further directed to MPEP 2144.06.

Regarding claim 19, neither Harada nor Sugaya nor Imai teaches that a halogen element should be included. Thus, the disclosures of each of these references would have led one of ordinary skill in the art to have excluded a halogen element.

Regarding claim 22, Harada is relied upon as stated above.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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9. Claims 1 and 15-19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of copending Application No. 12/645,198, in view of Sugaya. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of applicant's prior application are silent with regards to the limitations of claim 1 of solubility of the lubricant. However, claim 1 of said prior application and the instant claims list many of the same compounds to act as lubricant. Thus, the commonly claimed lubricants must inherently have the claimed features. It would have been obvious to one of ordinary skill in the art at time of invention to have practiced the invention of claim 1 by combining the embodiments in the various claims of applicant's prior patent.

Applicant's prior application does not teach wherein the coating of hydrophilic material is applied to the die prior to filling the powder in the die.

Sugaya teaches a die used for die compaction of powdered metal (see title, abstract, Brief Summary of the Invention or claim 1). Sugaya teaches that the die is formed with a coating on the molding portion which may include an Al_2O_3 material (see Brief Summary of the Invention or [0017] or [0021]). The Al_2O_3 material meets the limitation of a hydrophilic material comprising an Al-O bond element inherently, because it is the same material as described in the instant claim and specification. Applicant is further directed to MPEP 2112.01. Sugaya teaches that the die is used in order to reduce friction inside the wall of the die and reduce ejection pressure (see [0009], [0007], [or [00021]). Sugaya teaches that after the coating is applied, and before the

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compaction step, a lubricant film may be added to the coated die surface, and/or to the metal powder (see [0023]).

It would have been obvious to one of ordinary skill in the art at time of invention to have practiced the method of 12/645,198, and to have used in the method the coated die of Sugaya, because Sugaya teaches that the die is used in order to reduce friction inside the wall of the die and reduce ejection pressure (see [0009], [0007], [or [00021]]).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

10. Applicant's arguments filed 20 May 2011 have been fully considered but they are not persuasive.

Applicant argues that the claimed invention teaches that the hydrophilic coating is applied before spraying the lubricant onto the die. The examiner acknowledges the amended portion of claim 1. However, this order of applying the coating of Sugaya is explicitly taught in Sugaya, as [0023] teaches that a lubricant may be applied to the die after the inventive process coating of the material.

Applicant argues that the prior art does not teach that the contact angle is reduced in the lubricant by using the hydrophilic coating. The examiner agrees that the prior art does not explicitly state this feature. However, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion

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of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). In the instant case, Sugaya teaches the coating of Al_2O_3 onto the die, which may be followed by a lubricant coating.

Applicant argues that Sugaya fails to teach prior hydrophilic coating process followed by the application of an aqueous solution. However, Sugaya as cited above explicitly describes that a separate lubricant may be applied to the die after the coating. Further, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The order of applying the coating and lubricant would have been obvious to one of ordinary skill in the art for reasons stated above.

Applicant argues that Murata does not teach that the lubricant is dissolved, instead teaching that it is dispersed. However, applicant's statements are based on only one component of Murata, whereas Murata teaches a multiple component system. Murata teaches that the composition comprises "(A) as its base, a water-soluble inorganic salt that strongly adheres to the substrate" (see Summary of the Invention, p. 3). It is the water soluble inorganic salt that matches the "water soluble lubricant" as claimed. As stated above, Murata explicitly describes the same chemicals as explicitly claimed for the lubricant. Thus, in Murata, the "water-soluble inorganic salt" is dissolved, meeting the limitation of an aqueous solution. The other ingredients which are insoluble and dispersed do not change the fact that Murata uses a solution of main ingredient (A).

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Further, the additional, insoluble ingredients in the composition of Murata are not excluded from the language of the instant claims.

Applicant argues that the copending application was filed under a different assignee and therefore the non-statutory obviousness type double patenting is moot. However, the instant application and the copending application have the same inventorship, and therefore the ODP rejection is made over the copending application.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER KESSLER whose telephone number is (571)272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Roy King/
Supervisory Patent Examiner, Art
Unit 1733

csk